

**FACT SHEET/STATEMENT OF BASIS
BIOSOLIDS MANAGEMENT
STATEMENT OF BASIS
R³ of UTAH, LC
UPDES PERMIT NUMBER: UTL-025496
RENEWAL, INDUSTRIAL PERMIT**

FACILITY CONTACT

Todd Thakeray, Foreman
R3 of Utah, L.C.
230 Skull Valley Road
North Salt Lake, UT 84029
Telephone (435)-830-5946

DESCRIPTION OF FACILITY

The operations of R³ are located in Skull Valley, Tooele County, Utah in Section 4, Township 4S and Range 8W, just west of State Road 196, 19 miles north of the entrance to Dugway Proving Grounds. The first phase of the facility consists of a half acre area of which a quarter acre of this area is a pad of impermeable asphalt with berms and a storm water runoff pond designed to contain a 25-year, 24-hour storm event. During the first phase of operations, the only waste that R³ accepted was from de-watered solids (sewage sludge) from public owned treatment plants (POTWs) of Utah. R³ has future plans to accept de-watered Class A or Class B biosolids from out-of-state for land application for agriculture production on private property, and may expand the pad to store and/or process the additional out-of-state biosolids prior to land application. If the pad is expanded, the expansion will need to be impermeable, with the same berms and storm water requirements as above.

DESCRIPTION OF BIOSOLIDS TREATMENT AND DISPOSAL

The treatment consists of spreading the biosolids less than a foot thick on the pad to initiate a rapid reduction of water content in the material. Then the process of mixing and forming the windrows for further treatment begins. The windrows are about 1-3 feet high, and about 3-5 wide. The air drying and turning of the windrows will be to further de-water the biosolids and reduce pathogens and achieve appropriate levels of vector attraction reduction. Once moisture reduction is achieved the “old dried solids” will be mixed with the “new wet solids” to accelerate the moisture reduction of the new biosolids. This process will be ongoing until R³ believes the biosolids will pass testing requirements proving the product meets Class A or Class B standards.

If the product meets Class A standards the biosolids may be sold or given away to the public or land applied at agronomic rates for agricultural production. Should the product fail to meet the requirements of Class A standards but does meet Class B pathogen standards, it may be used on farm fields, rangeland, reclamation sites and other low public contact sites. If the product does not meet at least Class B standards, it will need to be properly disposed in a landfill.

SELF-MONITORING REQUIREMENTS

Under 40 CFR 503.16(a)(1), the self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the table below.

Minimum Frequency of Monitoring (Dry Metric Tons (DMT))	
Amount of Biosolids Disposed Per Year	Monitoring Frequency
> 0 to < 290 DMT	Once Per Year
> 290 to < 1,500 DMT	Four Times Per Year
> 1,500 to < 15,000 DMT	Six Times Per Year
> 15,000 DMT	Twelve Times Per Year

Landfill Monitoring

Prior to disposal in a landfill all biosolids must pass a paint filter test (to determine if the biosolids exhibit free liquid). If the solids do not pass a paint filter test, the biosolids cannot be disposed of in the landfill.

Metals Monitoring

R³ is required to sample for metals prior to the time of disposal if the biosolids are land applied or sold or given away to the public.

Pathogen Monitoring for Class A Biosolids

If the biosolids have met a PFRP, the biosolids must be sampled for either *salmonella* or *fecal* coliform. If the biosolids have not met a PFRP, the biosolids must be sampled for *salmonella* or *fecal* coliform, viable helminth ova and enteric viruses.

Pathogen Monitoring for Class B Biosolids

For biosolids to be considered Class B in regards to monitoring, the biosolids may need to be sampled for *fecal* coliform.

Vector Attraction Reduction Monitoring

The biosolids must be monitored for time and temperature for vector attraction reduction or use another means of meeting a requirement for vector attraction reduction under 40 CFR 503.33.

MONITORING DATA

R³ has not land applied any biosolids since 2004. However they wish to maintain a valid UPDES biosolids permit should there be changes in the future. R³ was only required to sample once in 2004, however R³ sampled twice. The data below shows that R³ has met the requirements of the last permit with regards to heavy metals and pathogens.

HEAVY METALS MONITORING

R ³ Metals Monitoring Data, 2004			
Parameter	Table 3, (Exceptional Quality) mg/kg	Average, mg/kg	Maximum, mg/kg
Arsenic	41.0	17.3	21.80
Cadmium	39.0	8.40	12.30
Copper	1,500.0	708.0	773.0
Lead	300.0	84.3	150.0
Mercury	17.0	2.51	2.27
Molybdenum	75.0	7.92	8.55
Nickel	400.0	11.3	12.40
Selenium	36.0	10.6	11.50
Zinc	2,800.0	1424.5	2007.0

PATHOGEN MONITORING DATA

R ³ Pathogen Monitoring Data, 2004	
Salmonella, mpn/4g/total solids	Below detection limit
Plaque forming unit per 4 grams of enteric virus	Below detection limit
Viable Helminth Ova/4g/total solids	Below detection limit

BIOSOLIDS LIMITATIONS

Heavy Metals

Class A Biosolids for Home Lawn and Garden Use

The intent of the heavy metals regulations of Table 3, *40 CFR 503.13* is ensure the heavy metals do not build up in the soil in home lawn and gardens to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see Part I. D. 11. of the permit) to be handed out to all people who are receiving and land applying Class A biosolids to their lawns and gardens. If the instructions of the information sheet are followed to any reasonable degree, the Class A biosolids will be able to be land applied year after year, to the same lawns and garden plots without any deleterious effects to the environment. The information sheet must be provided to the public, because the permittee is not required, nor able to track the quantity of Class A biosolids that are land applied home lawns and gardens.

Class A Requirements With Regards to Heavy Metals

If the biosolids are to be applied to a lawn or home garden, the biosolids shall meet the maximum heavy metals in Table 1 and the monthly average pollutant concentrations in Table 3 (see the Table 1 and Table 3 below). If the biosolids do not meet these requirements, the biosolids cannot be sold or given away for applications to home lawns and gardens.

Class B Requirements for Agriculture and Reclamation Sites

The intent of the heavy metals regulations of Tables 1, 2 and 3, of *40 CFR 503.13* is to ensure that heavy metals do not build up in the soil at farms, forest land, and land reclamation sites to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see Part I. D. 11. of the permit) to be handed out to all people who are receiving and land applying Class B biosolids to farms, ranches, and land reclamation sites. If the biosolids are land applied according to the regulations of *40 CFR 501.13*, to any reasonable degree, the Class B biosolids will be able to be land applied year after year, to the same farms, ranches, and land reclamation sites without any deleterious effects to the environment.

Class B Requirements With Regards to Heavy Metals

If the biosolids are to be land applied to agricultural land, forest land, a public contact site or a reclamation site it must meet at all times:

The maximum heavy metals listed in Table 1 and the heavy metals loading rates in Table 2; or

The maximum heavy metals in Table 1 and the monthly heavy metals concentrations in Table 3.

If the biosolids do not meet these requirements they cannot be land applied.

Tables 1, 2, and 3 of Heavy Metal Limitations

Heavy Metals	Table 1	Table 2	Table 3
All heavy metals concentrations shall be measured and reported	Daily Maximum mg/Kg <u>a/b/c/d/</u>	Cumulative Loading Rate Kg/Ha <u>a/</u>	Monthly Average Concentration mg/Kg <u>a/b/c/d/</u>
Total Arsenic	75	41	41
Total Cadmium	85	39	39
Total Copper	4300	1500	1500
Total Lead	840	300	300
Total Mercury	57	17	17

Total Molybdenum	75	N/A	N/A
Total Nickel	420	420	420
Total Selenium	100	100	100
Total Zinc	7500	2800	2800

- a/ See Part V. of the permit for definition of terms.
- b/ The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application.
- c/ Any violation of these limitations shall be reported in accordance with the requirements of Part II.G.1. of the permit.
- d/ These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period.

Pathogens

Class A Requirements for Home Lawn and Garden Use

R³ intends to achieve Class A biosolids in one of three different ways with regards to pathogens:

1. Under *40 CFR 503.32(6), Class A, Alternative 4(i)*, R³ is allowed to do additional testing of pathogens in lieu of a process to further reduce pathogens (PFRP) to meet Class A standards. This additional testing requires R³ to monitor for viable helminth ova (tape worms and round worm eggs that could hatch), enteric viruses (viruses of the gut), as well as *fecal* coliform or *salmonella*.
2. Under *40 CFR 503.32(7), Class A, Alternative 7(ii)* R³ may use two different methods of composting to meet the requirement for a process to further reduce pathogens (PFRP).
 - a. Composting using the windrow method, the temperature of the biosolids is maintained at 55° C (131°F) or higher for at least 15 days, with a minimum of 5 turnings of the windrows during the 15 days, and tested for either *fecal* coliform or *salmonella*.
 - b. Composting using the static aerated pile method, the temperature of the biosolids is maintained at 55° C (131°F) or higher for at least 3 days, and tested for either *fecal* coliform or *salmonella*.

Class B Requirements for Agriculture and Reclamation Sites

R³ intends to achieve Class B biosolids in one of two different ways with regards to pathogens:

1. Under *40 CFR 503.32 (b)(2) Appendix B*, R³ may test the biosolids and must meet a microbiological limit of less than 2,000,000 MPN of fecal coliform per gram for the biosolids to be considered Class B biosolids with respect to pathogens.
2. Under *40 CFR 503.32 (b)(3)* R³ must meet one of the processes to significantly reduce pathogens. R³ intends to meet a process to significantly reduce pathogens by using the windrow method of composting. To achieve this, the temperature must be above 40° C (104° F) or higher, and remain at 40° C or higher for a minimum of five days. For four hours, during the five days, the temperature needs to exceed 55° C.

Vector Attraction Reduction

If the biosolids are land applied R³ will be required to meet a method of vector attraction reduction under *40 CFR 503.33*. R³ intends to meet one of the vector attraction reduction requirements below.

1. Aerobic treatment of the biosolids for at least 14 days at over 40° C (104° F) with an average temperature of at least 45° C (113° F) *503.33(b)(5)*.
2. Solids are equal to or greater than 75% or greater prior to mixing with other materials *503.33(b)(7)*.
3. Solids are equal to or greater than 90% total solids when primary solids are present *503.33(b)(8)*.
4. All Class B biosolids land applied shall be incorporated into the soil within 6 hours after land application *503.33(b)(10)*.
5. All Class A biosolids land applied shall be incorporated into the soil within 6 hours after land application *503.33(b)(10)*.

Record Keeping

The record keeping requirements from *40 CFR 503.17* are included under Part II.F. of the permit. The amount of time the records need to be retained is dependent upon the quality of the biosolids with regard to the metals concentrations. If the biosolids exceed Table 3 values for any parameter that are land applied to a site, that site thereafter is subject to the heavy metals loading rates in Table 2. Records for those sites are to be retained in perpetuity.

Reporting

R³ will be required to report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with Part II.D. of the permit, information on management practices, land application sites, and certifications will be due no later than February 19 of each year. Each report is for the previous calendar year.

Duration of Permit

This fact sheet, statement of basis, and permit were written by Mark Schmitz, Environmental Scientist, Utah Department of Environmental Quality. It is recommended that this permit be effective for the duration of five years.

Signed this XXth day of XXXXX.

Mark Schmitz, Environmental Scientist

Date of public notice _____

Were any public comments received? Yes ___ No ___

The permit was changed or was not changed as a result of the public comments.